Autonomous, On-board Processing for Sensor Systems

Completed Technology Project (2009 - 2012)
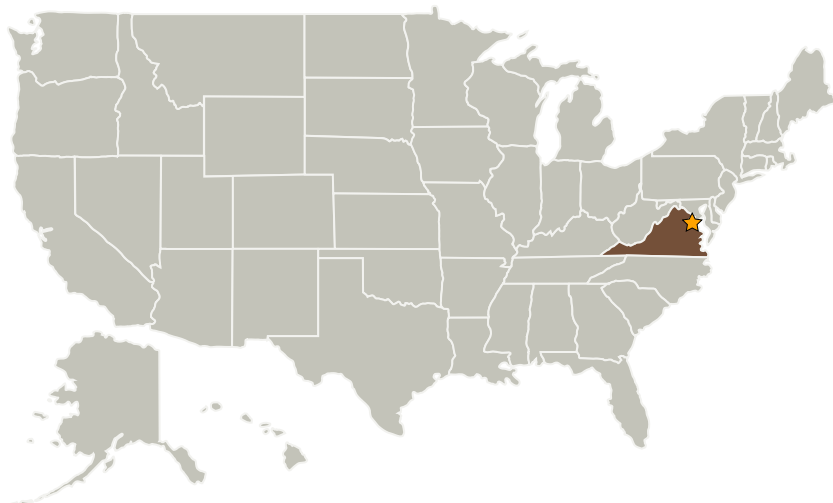
Project Introduction

Fuse high performance reconfigurable processors with emerging fault-tolerance & autonomous processing techniques for a 10-100x decrease in processing time.

This means more science experiments conducted per day & more thorough, timely analysis of captured data.

Addresses the ability to quickly react & adapt processing or mission objectives in real-time, by combining autonomous agents with reconfigurable computing.

Enables Autonomous On-board Processing for Sensor Systems (A-OPSS), via a tool-suite that generates a run-time system for sensor systems to autonomously detect changes in collected data & tune processing in a controlled manner to adapt to unforeseen events.

Decadal Survey Missions: Primary - DESDynl, HyspIRI, GEO-CAPE; Secondary – SMAP, SWOT

Primary U.S. Work Locations and Key Partners

Organizations Performing Work	Role	Type	Location
⭐NASA Headquarters(HQ)	Lead Organization	NASA Center	Washington, District of Columbia
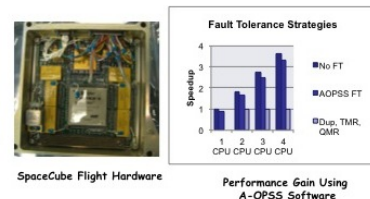
Project Image Autonomous, On-board Processing for Sensor Systems

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Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Lead Center / Facility:

NASA Headquarters (HQ)

Responsible Program:

Earth Science

Primary U.S. Work Locations

Virginia

Images
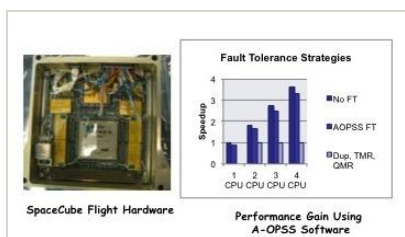
11848-1360262721183.jpg
Project Image Autonomous, On-board Processing for Sensor Systems
(https://techport.nasa.gov/image/1625)

Project Management

Program Director:
George J Komar

Project Manager:
Michael S Seablom

Principal Investigator:
Matthew French

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**

1	2	3	4	5	6	7	8	9
Applied Research			Development			Demo & Test		
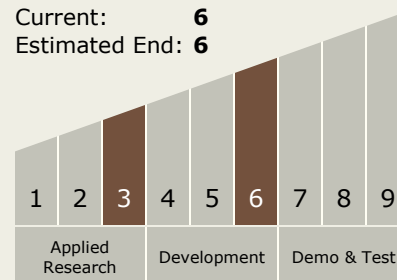
Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  └ TX11.6 Ground Computing
    └ TX11.6.1 Exascale Supercomputer

Target Destination
Earth

Tech Port

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For more information and an accessible alternative, please visit:
https://techport.nasa.gov/view/11848

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